¹⁄₁₆ DIN MICROMEGA® Autotune PID Temperature/Process Controllers

CN77000 Series Starts at
$229

5 YEAR WARRANTY · **MADE IN USA** · CE · c UL us

Shown actual size.

✔ **High Accuracy: ±0.5°C (0.9°F), 0.03% Rdg**
✔ **High Quality Backed by 5-Year Warranty**
✔ **Universal Inputs— Process Voltage/Current, Thermocouple, RTD**
✔ **Dual 4-Digit LED Display and Indicators for Output and Alarm Status**
✔ **Optional RS232, RS485, OMEGA® Protocol, and MODBUS Protocol**
✔ **Relay, SSR, DC Pulse, 0 to 10 V, and 0 to 20 mA Output Types**
✔ **Ramp-to-Setpoint Feature**
✔ **Universal Power Supply, 90 to 250 Vac or Vdc**
✔ **Dual Output and Dual Alarm Capability**
✔ **Isolated Analog Output or Remote Setpoint Selection**

CN77533, $239, NEMA 4 square cutout.

CN77333-A2, $235, NEMA 12 style square cutout.

The high-accuracy, high-quality MICROMEGA® controllers offer unparalleled flexibility in process control. Each unit allows the user to select the input type, from 10 thermocouple Types (J, K, T, E, R, S, B, C, N, and J DIN), Pt RTDs (100, 500, or 1000 Ω, with either 385 or 392 curve), or analog voltage or current input. The voltage/current inputs are fully scalable to engineering units, with a selectable decimal point, perfect for use with pressure, flow, or other process inputs.

The MICROMEGA® controller features a large, dual LED display, front-panel configuration, selectable temperature/process inputs, and universal power supply that accepts 90 to 250 Vac or Vdc. Available in single- and dual-output

configurations, the CN77000 Series is available with relay, SSR, DC pulse, or analog voltage or current outputs. A single alarm is standard. Options include a second alarm, RS232, RS485, analog output, and remote setpoint selection.

The "300" Series controllers offer many features of larger, ¼ DIN controllers in a compact, ¹⁄₁₆ DIN size. These controllers feature a ¹⁄₁₆ DIN cutout and bezel with a NEMA 12 (IP54) rating, and dual LED displays, which show different colors for the process and setpoint values. Individual indicators provide output and alarm status.

The "500" features a ¹⁄₁₆ DIN cutout, 53.3 mm (2.1") square face with NEMA 4 (IP65) rating, large dual LED display, front-panel configuration, and selectable temperature/process inputs. Available in single- and dual-output configurations, the CN77500 is available with relay, SSR, DC pulse, or analog voltage or current outputs. A single alarm is standard.

The R300 and R500 controllers feature a detachable display and adaptor to allow mounting in a round, 44 mm (1.75") cutout. This feature allows users to prepare the panel with a standard round hole saw as well as the conventional ¹⁄₁₆ DIN cutout. The 2-piece design snaps together, for quick, easy installation.

PUT A SQUARE CONTROLLER IN A ROUND HOLE!

CN77000 R300 and R500 controllers shown with model RHS-43 hole saw, $19, for easy-to-drill round holes. See page P-40 for ordering information.

Specifications

Accuracy: ±0.5°C (0.9°F) temp;
0.03% rdg process
Resolution: 1°/0.1°; 10 µV process
Temperature Stability:
0.08°C/°C; 50 ppm/°C process
Thermocouple Cold-End Tracking:
0.05°C/°C
NMRR: 60 dB
CMRR: 120 dB
Common-Mode Voltage: 1500 V peak
test, 350 V per IEC spacing
A/D Conversion: Dual slope
Reading Rate: 3 samples/s
Digital Filter: Programmable
Display: Dual 4-digit, 7-segment LED,
9.2 mm (0.36"); red process variable,
green setpoint; indicators for output and
alarm status; 7.6 mm (0.3") for NEMA
12 (IP54) units
Warm-Up to Rated Accuracy: 30 min

Input

Input Types: Thermocouple, RTD,
analog voltage, analog current
Thermocouple Lead Resistance:
100 Ω max
RTD Input: 2-, 3- or 4-wire; 100, 500
and 1000 Ω; 0.00385 or 0.00392 Pt curve
Voltage Input:
0 to 100 mV, 0 to 1 V, 0 to 10 Vdc
Current Input: 0 to 20 mA, 4 to 20 mA
Configuration: Single-ended
Polarity: Unipolar
Step Response: 0.7 s for 99.9%
Decimal Selection: None, 0.1 or 0.01
Span Adjustment:
0.001 to 9999 counts
Offset Adjustment: -9999 to 9999

Control

Action: Reverse (heat) or direct (cool)
Modes: Time proportioning and
proportional control modes; selectable
preset tune, autotune, PID, proportional,
proportional with integral, proportional
with derivative with anti-reset
windup, on/off
Rate: 0 to 999.9 s
Reset: 0 to 99 min, 59 s
Cycle Time: 1 to 199 seconds;
set to 0 for on/off operation
Gain: 0.5 to 100% of span;
setpoints 1 or 2
Damping: 1 to 8 in unit steps
Soak: 00.00 to 99.59 (HH.MM)
Ramp to Setpoint:
00.00 to 99.59 (HH.MM)
Autotune: For heating only
Break Protection:
Programmable up- or down-scale

Control Output

Relay: 5 A @ 120 Vac, 3 A @ 240 Vac;
configurable for on/off, PID or ramp and
soak; output 1: SPDT type; output 2:
SPST type
SSR: Rated 0.5 A @ 120/240 Vac,
continuous
DC Pulse: Non-isolated;
10 Vdc @ 20 mA
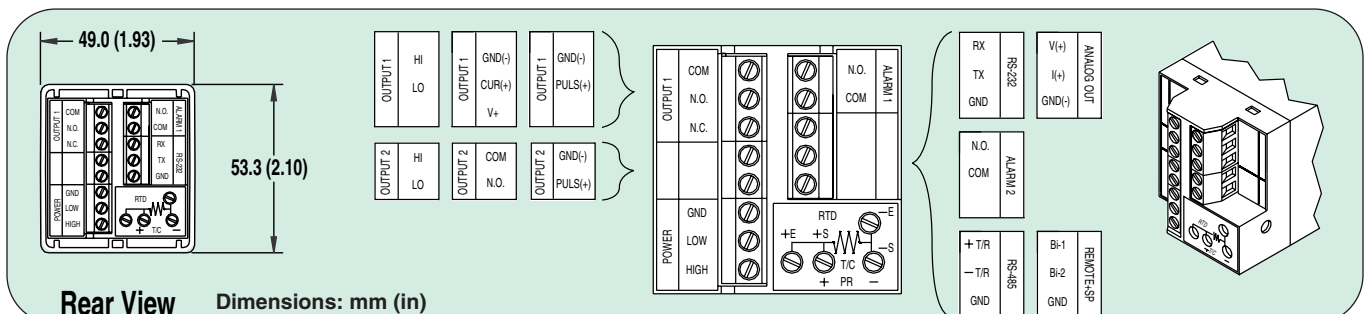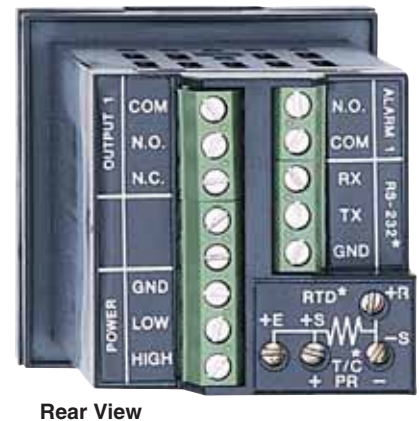**Analog Output:** Non-isolated 0 to 10 Vdc
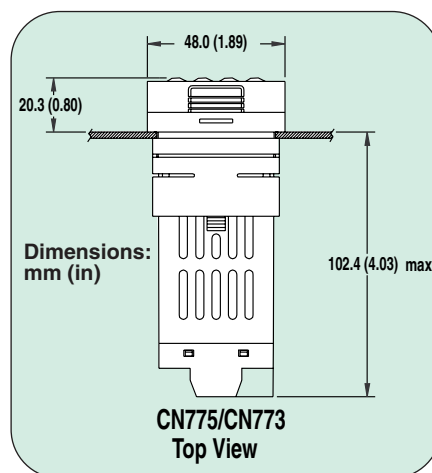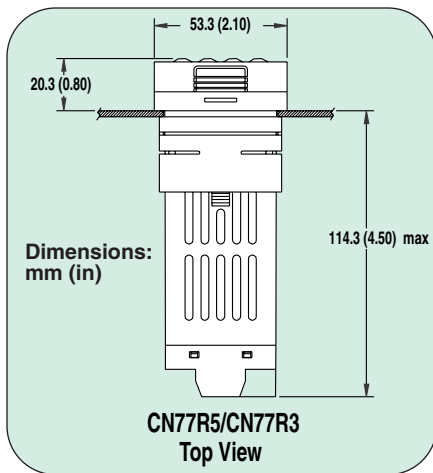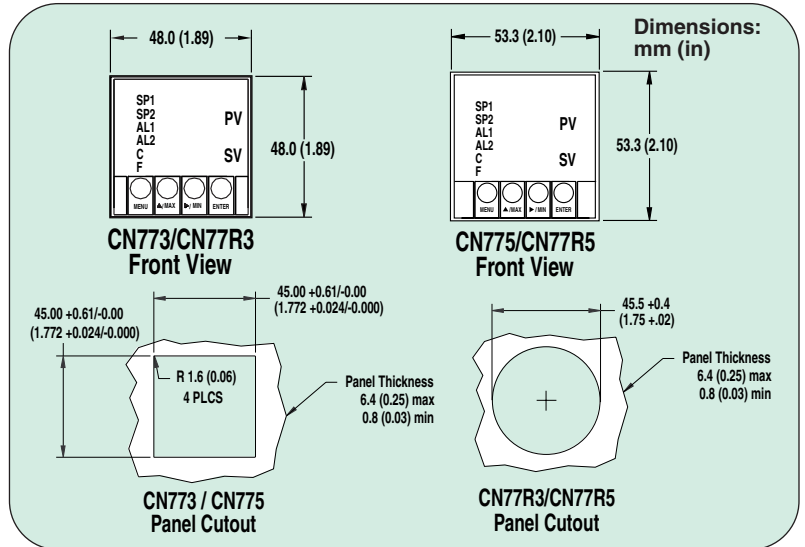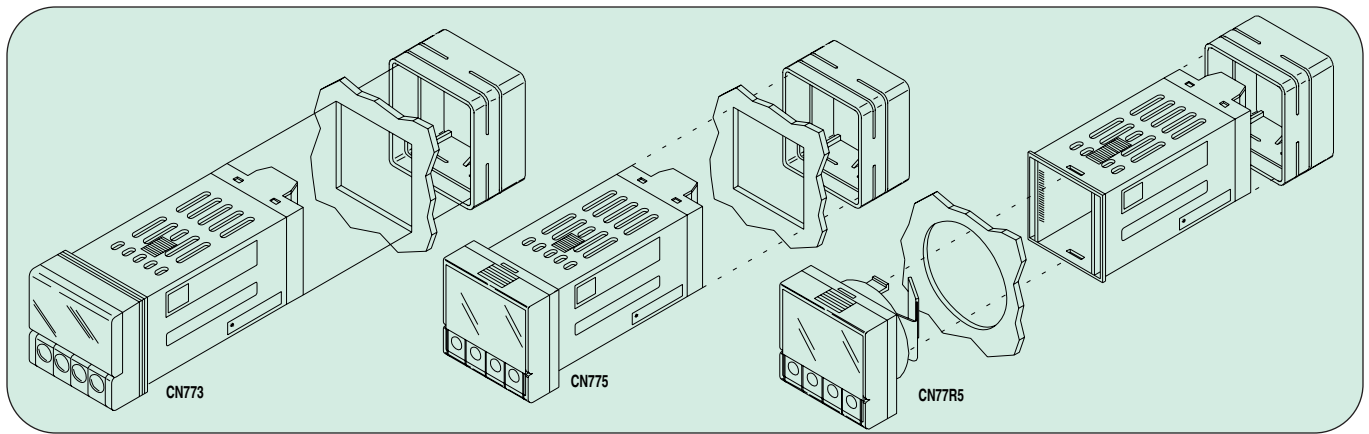or 0 to 20 mA; 500 Ω max

Options

Remote Setpoint Selection:
Up to 4 setpoints stored in memory;
contact closure selection
Analog Output: Isolated 0 to 10 Vdc or
0 to 20 mA, programmable

Communications

RS232 or RS485: OMEGA® protocol
and MODBUS protocol
300 to 19.2 Kb; complete programmable
setup capability; program to transmit
current display, alarm status, min/max,
actual measured input value and status
RS485: Addressable from 0 to 199
Connection: Screw terminals

Alarms

Type: SPST relay, 5 A @ 120 Vac,
3 A @ 240 Vac
Operation: High/low, latching/
non-latching and process/deviation;
front-panel configuration

Insulation

Power to Input or Output:
2500 Vac/dc, except alarm
2 option has only 1500 Vac/dc
between inputs 500 Vac/dc

General

Power: 90 to 250 Vac/dc, 50 to 400 Hz
Operating Ambient: 0 to 55°C
(32 to 131°F), 90% RH non-condensing
Power Consumption:
6 VA max @ 120 Vac
Panel Cutout
CN77R000 Series:
44.5 mm (1.75") Dia. round cutout;
CN77300 and CN77500 Series:
45 mm (1.772") square, 1⁄16 DIN
Dimensions:
  CN77R000 Series:
  48 H x 48 W x 135 mm D
  (1.89 x 1.89 x 5.32")
  CN77300 Series:
  48 H x 48 W x 123.3 mm D
  (1.89 x 1.89 x 4.85")
  CN77500 Series:
  53 H x 53 W x 123.3 mm D
  (2.1 x 2.1 x 4.85")
Weight: 227 g (0.5 lb)

Trim plates for mounting 1⁄16 controller in existing 1⁄4 DIN or 1⁄8 DIN cutouts. See page P-40.

TP4, $19

SPC116-S, $30, splashproof cover for 1⁄16 DIN controller. See page P-40.

TP6, $19

	Input Type	Range	Accuracy
J	Iron-constantan	-210 to 760°C/-346 to 1400°F	0.4°C/0.7°F
K	CHROMEGA®-ALOMEGA®	-270 to -160°C/-160 to 1372°C -454 to -256°F/-256 to 2502°F	1.0°C/0.4°C 1.8°F/0.7°F
T	Copper-constantan	-270 to -190°C/-190 to 400°C -454 to -310°F/-310 to 752°F	1.0°C/0.4°C 1.8°F/0.7°F
E	CHROMEGA®-constantan	-270 to -220°C/-220 to 1000°C -454 to -364°F/-364 to 1832°F	1.0°C/0.4°C 1.8°F/0.7°F
R	Pt/13%Rh-Pt	-50 to 40°C/40 to 1768°C -58 to 104°F/104 to 3214°F	1.0°C/0.5°C 1.8°F/0.9°F
S	Pt/10%Rh-Pt	-50 to 100°C/100 to 1768°C -58 to 212°F/212 to 3214°F	1.0°C/0.5°C 1.8°F/0.9°F
B	30%Rh-Pt/6%Rh-Pt	100 to 640°C/640 to 1820°C 212 to 1184°F/1184 to 3308°F	1.0°C/0.5°C 1.8°F/0.9°F
C	5%Re-W/26%Re-W	200 to 2320°C/400 to 4208°F	0.4°C/0.7°
N	Nicrosil-nisil	-250 to -100°C/-100 to 1300°C -418 to -148°F/-148 to 2372°F	1.0°C/0.4°C 1.8°F/0.7°F
L	J DIN	-200 to 900°C/-328 to 1652°F	0.4°C/0.7°F
RTD	Pt, 0.00385, 100Ω, 500Ω, 1000Ω	-200 to 900°C/-328 to 1652°F	0.4°C/0.7°F
	Pt, 0.00392, 100Ω, 500Ω, 1000Ω	-200 to 850°C/-328 to 1562°F	0.4°C/0.7°F
	Process voltage	0 to 100 mV, 0 to 1 V, 0 to 10 Vdc	0.03% rdg
	Process current	0 to 20 mA, 4 to 20 mA	0.03% rdg

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CN773

CN775

CN77R5

CN77500
Series
NEMA 4
faceplate

Technical Books Available Online!

books1.com™
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Dimensions: mm (in)

48.0 (1.89)

SP1
SP2
AL1
AL2
C
F

PV

SV

MENU ▲/MAX ▶/MIN ENTER

**CN773/CN77R3
Front View**

53.3 (2.10)

SP1
SP2
AL1
AL2
C
F

PV

SV

MENU ▲/MAX ▶/MIN ENTER

**CN775/CN77R5
Front View**

48.0 (1.89)

53.3 (2.10)

45.00 +0.61/-0.00
(1.772 +0.024/-0.000)

45.00 +0.61/-0.00
(1.772 +0.024/-0.000)

R 1.6 (0.06)
4 PLCS

Panel Thickness
6.4 (0.25) max
0.8 (0.03) min

**CN773 / CN775
Panel Cutout**

45.5 +0.4
(1.75 +.02)

Panel Thickness
6.4 (0.25) max
0.8 (0.03) min

**CN77R3/CN77R5
Panel Cutout**

53.3 (2.10)

20.3 (0.80)

114.3 (4.50) max

Dimensions:
mm (in)

**CN77R5/CN77R3
Top View**

48.0 (1.89)

20.3 (0.80)

102.4 (4.03) max

Dimensions:
mm (in)

**CN775/CN773
Top View**

Rear View

49.0 (1.93)

53.3 (2.10)

Rear View   Dimensions: mm (in)

OUTPUT 1 | HI | LO
OUTPUT 1 | GND(-) | CUR(+) | V+
OUTPUT 1 | GND(-) | PULS(+)

OUTPUT 2 | HI | LO
OUTPUT 2 | COM | N.O.
OUTPUT 2 | GND(-) | PULS(+)

OUTPUT 1 | COM | N.O. | N.C.

ALARM 1 | N.O. | COM

POWER | GND | LOW | HIGH

RTD | -E | +E | +S | T/C | -S | + PR -

RS-232 | RX | TX | GND

ANALOG OUT | V(+) | I(+) | GND(-)

ALARM 2 | N.O. | COM

RS-485 | + T/R | - T/R | GND

REMOTE-SP | Bi-1 | Bi-2 | GND

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CUSTOM CONFIGURATIONS

Custom firmware and hardware available in quantity.
Custom-color bezels and enclosures are available for original equipment manufacturers.
Enhance the appearance of your equipment design with custom colors.

CUSTOM COLORS

Consult the OMEGA® OEM GROUP.

Programming Cradle

With the MICROMEGA® programming cradle and our *FREE* software, setting up and configuring any quantity of MICROMEGA® controllers is fast and easy—especially valuable for OEM applications and systems integrators. Both the CN775 and CN773 front-removable MICROMEGA® controllers with serial communications are quickly and easily plugged in, programmed, and removed from the cradle. The cradle includes a standard 9-pin mini DIN cable for connection to a computer's RS232 (or RS485) serial port and is powered by 90 to 250 Vac/dc. The free Windows configuration software is menu driven and extremely user friendly (requires either MICROMEGA® "C2" RS232 or "C4" RS485 serial communications options).

Programming Cradle $75 CN77PC

Options

Ordering Suffix	Add'l Price	Description
-A2	**$6**	Second alarm relay
-C2	**50**	Isolated RS232
-C4	**50**	Isolated RS485
-PV	**65**	Isolated analog retransmission output
-RSP	**2**	4-stage remote setpoint

Accessories

Model Number	Price	Description
RHS-43	**$19**	Arbored hole saw 43 mm (1.68") for CN77R
SPC116-S	**30**	Splashproof cover for ¹⁄₁₆ DIN controllers
TP4	**10**	Trim plate adaptor to install ¹⁄₁₆ DIN meter in existing ¼ DIN panel cutout
TP6	**10**	Trim plate adapter to install ¹⁄₁₆ DIN meter in existing ⅛ DIN panel cutout
CN77PC	**75**	Programming cradle

Comes with complete operator's manual.
Ordering Examples: CN77533-PV, dual-output controller, ¹⁄₁₆ DIN cutout and bezel, NEMA 4/IP65 face, with 5 A SPDT relay output 1, 5 A SPST relay output 2, and optional analog output, $239 + 10 + 65 = $314.
CN77R544-A2, controller with dual pulse-type output and second alarm relay, RHS-43, arbored hole saw, $239 + 10 + 6 + 19 = $274.
CN77353, controller with NEMA 12 face, analog output and relay output, TP4, trim plate adaptor, $229 + 10 + 19 = $268.

■ MOST POPULAR MODELS HIGHLIGHTED!

To Order *(Specify Model Number)*

Model No.	Price	Output 1	Output 2
NEMA-12 Face with ¹⁄₁₆ DIN Cutout			
CN77333	$229	Relay	Relay
CN77334	229	Relay	DC pulse
CN77332	229	Relay	0.5 A SSR
CN77344	229	DC pulse	DC pulse
CN77343	229	DC pulse	Relay
CN77342	229	DC pulse	0.5 A SSR
CN77322	229	0.5 A SSR	0.5 A SSR
CN77323	229	0.5 A SSR	Relay
CN77324	229	0.5 A SSR	DC pulse
CN77353	229	Analog	Relay
CN77354	229	Analog	DC pulse
CN77352	229	Analog	0.5 A SSR
NEMA-1 Face with 44 mm (1¾") Round Cutout ¹⁄₁₆ DIN Bezel 48 mm (1.89") sq.			
CN77R333	$229	Relay	Relay
CN77R334	229	Relay	DC pulse
CN77R332	229	Relay	0.5 A SSR
CN77R344	229	DC pulse	DC pulse
CN77R343	229	DC pulse	Relay
CN77R342	229	DC pulse	0.5 A SSR
CN77R322	229	0.5 A SSR	0.5 A SSR
CN77R323	229	0.5 A SSR	Relay
CN77R324	229	0.5 A SSR	DC pulse
CN77R353	229	Analog	Relay
CN77R354	229	Analog	DC pulse
CN77R352	229	Analog	0.5 A SSR
NEMA 4 Face with ¹⁄₁₆ DIN Cutout			
CN77533	$239	Relay	Relay
CN77534	239	Relay	DC pulse
CN77532	239	Relay	0.5 A SSR
CN77544	239	DC pulse	DC pulse
CN77543	239	DC pulse	Relay
CN77542	239	DC pulse	0.5 A SSR
CN77522	239	0.5 A SSR	0.5 A SSR
CN77523	239	0.5 A SSR	Relay
CN77524	239	0.5 A SSR	DC pulse
CN77553	239	Analog	Relay
CN77554	239	Analog	DC pulse
CN77552	239	Analog	0.5 A SSR
NEMA 1 Face with 44 mm (1¾") Round Cutout, ¹⁄₁₆ DIN Bezel 53.4 mm (2.1") sq.			
CN77R533	$239	Relay	Relay
CN77R534	239	Relay	DC pulse
CN77R532	239	Relay	0.5 A SSR
CN77R544	239	DC pulse	DC pulse
CN77R543	239	DC pulse	Relay
CN77R542	239	DC pulse	0.5 A SSR
CN77R522	239	0.5 A SSR	0.5 A SSR
CN77R523	239	0.5 A SSR	Relay
CN77R524	239	0.5 A SSR	DC pulse
CN77R553	239	Analog	Relay
CN77R554	239	Analog	DC pulse
CN77R552	239	Analog	0.5 A SSR

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Displacement Transducers, Dynamic Measurement Force Sensors, Instrumentation for Pressure and Strain Measurements, Load Cells, Pressure Gauges, Pressure Reference Section, Pressure Switches, Pressure Transducers, Proximity Transducers, Regulators, Strain Gages, Torque Transducers, Valves

• Heaters

Band Heaters, Cartridge Heaters, Circulation Heaters, Comfort Heaters, Controllers, Meters and Switching Devices, Flexible Heaters, General Test and Measurement Instruments, Heater Hook-up Wire, Heating Cable Systems, Immersion Heaters, Process Air and Duct, Heaters, Radiant Heaters, Strip Heaters, Tubular Heaters

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